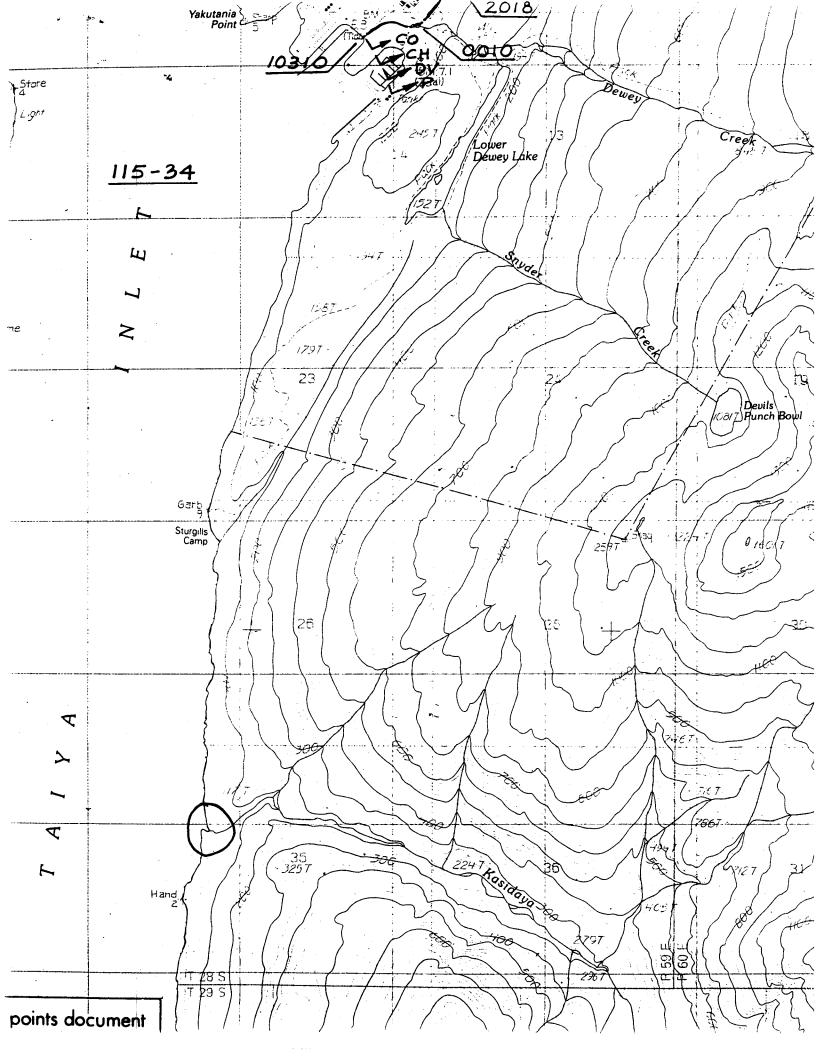
State of Alaska Department of Fish and Game Nomination for Waters Important to Anadromous Fish

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Weiss, Ed

From:

Hawkes, Clayton R.

Sent:

Friday, October 30, 1998 12:30 PM

To:

Weiss, Ed

Cc:

Ericksen, Randy; Estes, Christopher; Jones, Doug

Subject:

RE: catalog, Skagway B-1 NW

Ed,

It is critical that a good decision be made on the fish resources in this stream, because the preferred alternative for development of the hydro project would divert 100% of the water. You are correct that it isn't clear cut and the reports that were submitted do a good job of making it **difficult** to determine numbers of fish, size, species, date, location, etc.

Here is what I understand was caught:

9/12/97 4 small Dolly Varden in traps by Randy.
10/1/97 no fish caught in 2 traps
12/97 3 Dolly Varden, and 3 unindentified char (one 8-inch), and 2 chum salmon (3 and 7 inch).
3/2/98 3 salmonids probably Dolly Varden
3/12/98 3 Dolly Varden (all about 3.5 inches)
5/98 3 Dolly Varden (7-8 inches)

- Chum salmon (3 and 7 inch) would not have been in the area in December. These fish were likely another salmonid.
- All of the fish were captured below the high tide mark. The report indicates that the large pool above high tide was not well sampled. It was partially covered with ice in December and is generally too deep and large to effectively electroshock.
- All the fish were caught by electroshocking, except the 4 DV caught by Randy.
- Some of the Dolly Varden and unidentified char were at the lower end of spawning size range. The small Dolly Varden
 were either from this creek or another system. However, it seems to make the most sense that they were rearing in
 the freshwater of this creek.
- Salmonids (Dolly Varden were the only fish that could have been correctly identified) were caught consistently.

Dolly Varden can rear (over-winter) in one system, leave, and spawn in another creek. That pool may be important overwinter habitat. It is important that the pool be sampled again this winter. Without additional information, I am going to lean towards being conservative and recommend that the tailrace be routed to the creek mouth so that it will have water. It is a hard call for now --That is why I dragged Doug into the discussion.

Thanks for your time.

----Original Message----

From:

Weiss, Ed

Sent:

Thursday, October 15, 1998 1:55 PM

To:

Hawkes, Clayton R.

Cc:

Dolezal, Wayne; Don McKay (E-mail); Trasky, Lance

Subject:

RE: catalog, Skagway B-1 NW

This stream was not added to the AWC. The nomination was withheld pending further information. Randy's nomination noted that four Dolly Varden and 1 cottid were captured in one of five traps. The five traps were from a point 200 ft. above the HHW This trap was set in the intertidal area of the stream. It was also noted that significant barriers were present just upstream of this reach.

A report by Alaska Power and Telephone entitled "Fisheries Assessment of Kasidaya Creek for the Otter Creek Project, Skagway, Alaska" also documents fisheries sampling & observations made at the ADF&G's request. The report notes high gradient rapids and an approximately 100 foot barrier falls less than 150 feet inland from the OHW mark of the inlet. It also notes the four Dolly Varden captured by Randy on September 12, 1997. Additional sampling was conducted by Aquatic Environmental Services and Alaska Power and Telephone personnel on December 11 and 13, 1997. This sampling consisted of both minnow trapping and electroshocking. Upstream of the barrier six traps were fished for 2 hours and "thorough" electrofishing was conducted. Two traps were also

Fisheries Assessment of Kasidaya Creek for the Otter Creek Project, Skagway, Alaska

[December, 1997]

Conducted for:

ALASKA POWER AND TELEPHONE

191 Otto Street
Port Townsend, WA 98368
APT Project Manager: Glen Martin

By:

AQUATIC ENVIRONMENTAL SERVICES

2730-C Washington Street
Port Townsend, WA 98368
AES Project Manager: Dale B. Bonar

December 18, 1997

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I. Introduction and Scope of work

Alaska Power and Telephone (APT) has proposed construction of a 7.0 megawatt, run-of-river Otter Creek hydroelectric project on Kasidaya Creek located approximately 3 miles south of the City of Skagway, Alaska, along Taiya Inlet (Figure 1). This project would consist of a diversion structure at approximately 550 feet elevation, a 3,000 foot long penstock and a powerhouse on Taiya Inlet near the marine shoreline.

Kasidaya Creek is a high gradient riparian system, with rapids and barrier falls present less than 150 feet landward of the Ordinary High Water (OHW) level of Taiya Inlet. Although the creek is not believed to be a significant anadromous stream, the capture of four small Dolly Varden charr (Salvelinus malma) in minnow traps placed in the Creek mouth on September 12, 1997 has resulted in a request by Alaska Department of Fish and Game to include this waterbody in the anadromous waters catalog (ADF&G letter of November 28, 1997 from C. Hawkes). In this letter, ADF&G agrees with a proposed quarterly sampling schedule for the creek mouth (September and November-December, 1997 [completed] and March-April and May-June, 1998) and has requested both minnow trapping and electrofishing be performed. In addition, ADF&G requested that the reach immediately upstream and downstream of the proposed diversion structure be examined both by minnow trapping and electrofishing.

Aquatic Environmental Services (AES) and Alaska Power and Telephone (APT) personnel performed these studies on Kasidaya Creek on December 11 and 13, 1997. This report presents the protocols utilized and the results of this field analysis.

II. Site Description

Kasidaya Creek is a high gradient riparian system that drains approximately 19 square miles of basin just south of Skagway, Alaska. The creek is approximately 4.5 miles in length and begins as a glacier fed rivulet at an elevation of approximately 2500 feet. Figure 1 shows the major tributaries in the Kasidaya Creek basin.

Uplands Diversion Site:

The proposed diversion site lies at an elevation of approximately 550 feet along a shallow gradient reach of the creek. This steep-banked reach is approximately 500 feet in length and contains several small pools interspersed with rapids. Downstream from this site are inaccessible, higher gradient rapids leading to a 100 foot high (approximately)

waterfall. There are no typical "riffle-run" areas within the reach. Except for some sand and gravel areas within the pools, the substratum is primarily fractured basalt and granite rock and boulders. The photographs in Figure 4 show the general nature of the diversion site reach.

Creek Mouth on Taiva Inlet:

The mouth of Kasidaya Creek opens to tidal waters between two large boulders, emptying a pool at the base of an impassable anadromous barrier falls approximately 100 feet beyond the boulders. During the higher (spring) tides of extreme tidal series such as those during this field visit (see below), water in Taiya Inlet rises above the normal level of the pool, resulting in some degree of tidal mixing within the pool. As the tide recedes, the creek cascades down the relatively steep tidal foreshore through a series of small pools and rapids, similar to the upstream creek structure. The creek bed in this area is composed of boulders, rocks and large cobble, with some small areas of gravel or fine sand. The photographs in Figure 5 show the general nature of the creek mouth.

Weather and Tidal State:

The upstream diversion site was examined on December 11, 1997. Weather was generally overcast with an air temperature in the mid-30s. Six to eight inches of snow was on the ground and on boulders in the creek bed. Water flow was not as high as during the May, 1997 visit, but was estimated to be in the range of 90 cfs. Light rain fell for a short period in mid morning, but in general the daylight hours were relatively precipitation-free.

The creek mouth site was examined just after dawn on Saturday, December 13, 1997. The tides on this day were some of the largest of the year, with an estimated low of -3.3' at 6:34 pm and an estimated high tide of +19.6' at 12:06 pm. At 8:30 am when the field crew arrived on the beach, the tide level was approximately +7.6'. At 10:15 am when the crew left the beach, the tide level was approximately +16.0'.

III. Methodology

Minnow Traps.

Plastic minnow traps (16-3/4" long by 8-3/4" max diameter by 3/16" mesh) were baited with betadine-treated coho salmon eggs supplied by ADF&G staff member Randy Ericksen. In the creek reach around the diversion site, six traps were spaced throughout

the three largest pools (sites shown on Figure 2) and left undisturbed for approximately 2 hours while more distant portions of the reach were examined by electrofishing (see below).

Due to extreme high tides during daylight at the creek mouth throughout the duration of this site visit it was not possible to perform an adequate minnow trapping protocol. Two traps were placed within the mouth of the creek for a period of approximately 1 hour. The tide was rising too rapidly to effectively trap the lower creek outlet area while electrofishing was being conducted, and the traps which were placed had to be removed before high tide prevented the helicopter from landing to retrieve the field staff. Trap placement locations are shown in Figure 3.

Electrofishing

A Smith-Root Model 12 Backpack Electrofisher unit was used to examine the pools and accessible rapids areas at the mouth of Kasidaya Creek and around the proposed diversion site. This unit has 400 Watts of continuous output and is outfitted with a standard 11" diameter anode ring and rat-tail cathode. A power setting of 400 Watts and a frequency of 60 cps was used throughout the assessment of the diversion site. Approximately two hours of in-water electrofishing were conducted along the diversion site reach, and one and one-quarter hour of inwater electrofishing was conducted around the creek mouth. A power setting of 500 Watts and 60 cps was used during the assessment of the (potentially brackish) creek mouth.

All accessible margins of the pools and rapids were examined as well as the deeper portions of the pools that could be reached by wading or use of the 6' extension anode. The operator of the Electrofisher unit wore a safety harness that was secured with a safety rope by a shoreside assistant, so that at least some sections of the rapids could also be safely examined.

IV. Results and Discussion

Diversion Site:

No fish were captured or observed along the 500 feet of creek reach around the proposed diversion site. The six baited minnow traps were all empty following two hours of immersion. Thorough electrofishing of the accessible pools and rapids throughout this reach did not reveal any evidence of fish.

At the time of this visit there was a low-moderate flow of water in the creek, estimated

to be less than 90 cfs. At this flow rated, there are limited gravel and sand areas apparent in some of the pools which could be spawning habitat. However, at high flow periods of the year, these areas are probably heavily scoured and it is unlikely that successful spawning, incubation and residence could occur.

Creek Mouth at Taiva Inlet:

Five salmonids were observed as a result of electrofishing efforts at the creek mouth at the locations shown on Figure 3. All fish were released immediately after capture. No fish were caught in the minnow traps. Three dolly varden charr (Salvelinus malma) were collected in the creek outlet within the tidal range of approximately +12 to +17 feet. The two smaller charr were in the 3-4 inch range and were found hiding under rock shelves in the +12 to +15 foot tidal range. A larger, 8 inch charr was found next to a boulder on the edge of fast moving water at the +17 foot tidal level.

Two small chum salmon (Oncorhynchus keta) were also collected in the creek mouth. A small, 3 inch bright chum was captured at the +12 foot tidal level and a 7 inch, darker chum was captured at the +20 foot tidal level near the boulders at the exit of the pool inside the creek mouth. This larger chum was dark steel blue/green dorsally and was scraped and scarred, as if it had escaped from a predator or had been abraded by sharp rocks.

No fish were captured from within the pool itself. Approximately one-half of the pool on the outlet side could be examined by electrofishing. Depth of the pool and the steep creek sides did not allow us to electrofish all the way to the barrier falls.

Small areas of fine sand and larger gravel were present in the creek outlet that could conceivably support salmonid spawning. However, at times of high creek flows, this area is probably scoured heavily and it is unlikely that spawning and incubation could successfully occur at this site.

V. Conclusions

Intensive fishing efforts did not reveal any fish at the diversion site located at an elevation of approximately 550 feet. Because of the steep stream gradient and numerous barrier falls, it would be highly unlikely fish would be present anywhere in the upper system unless deliberately introduced. Even in the lower creek reaches above the first anadromous barrier falls, the narrow creek bed, high gradient and high flow rates would make it extremely difficult for any fish population to maintain itself, even if introduced.

At the mouth of Kasidaya Creek, all captured fish were located within the intertidal range. It is likely that these captured fish were transient fish that were migrating along the shoreline and were only temporarily resident in the creek mouth. It is possible that fish may take up longer residence nearer the barrier falls in the pool at the creek mouth but were not captured because we were unable to survey the full extent of the pool. However, as noted previously, the high gradient and high flow characteristics of this narrow creek make it unlikely that this is a reliable spawning or rearing area for salmonids.

VI. Subsequent Field Studies in 1998

Field studies during the late winter and spring of 1998 will focus on the creek mouth and will include extensive minnow trapping, electrofishing and hook-and-line fishing of the entrance pool.

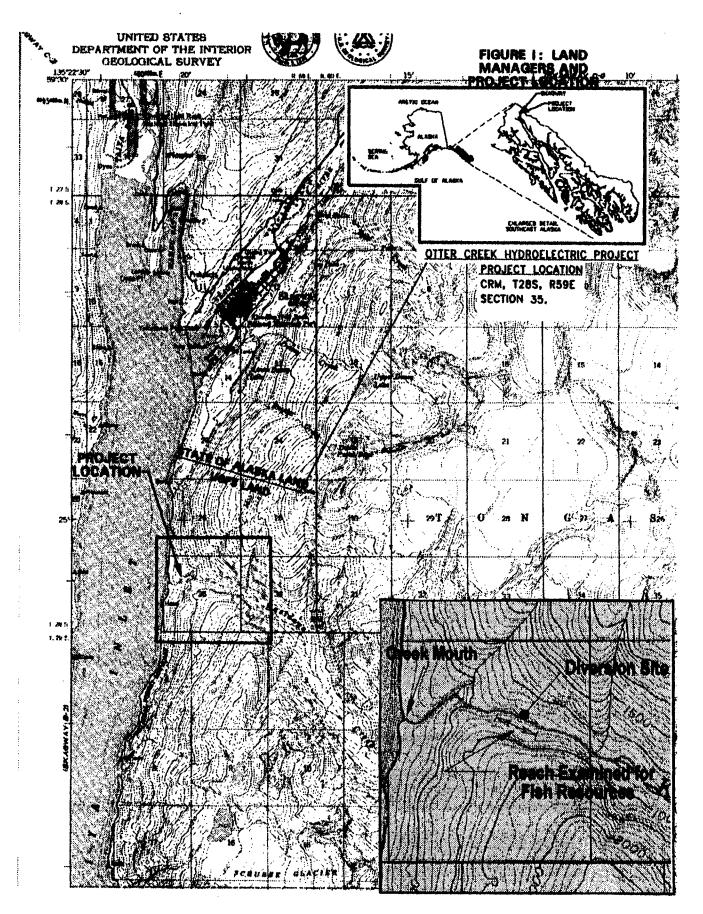


Figure 1. Otter Creek Hydro Project Site on Kasidaya Creek.

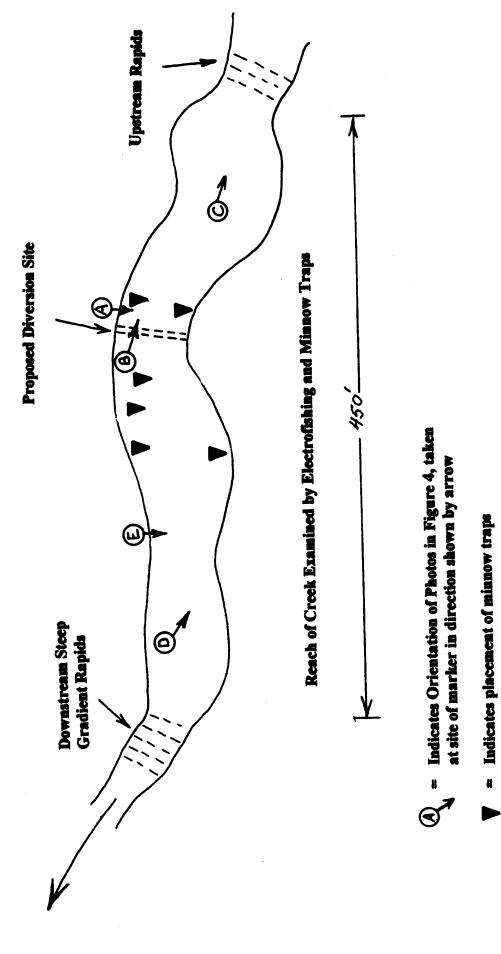
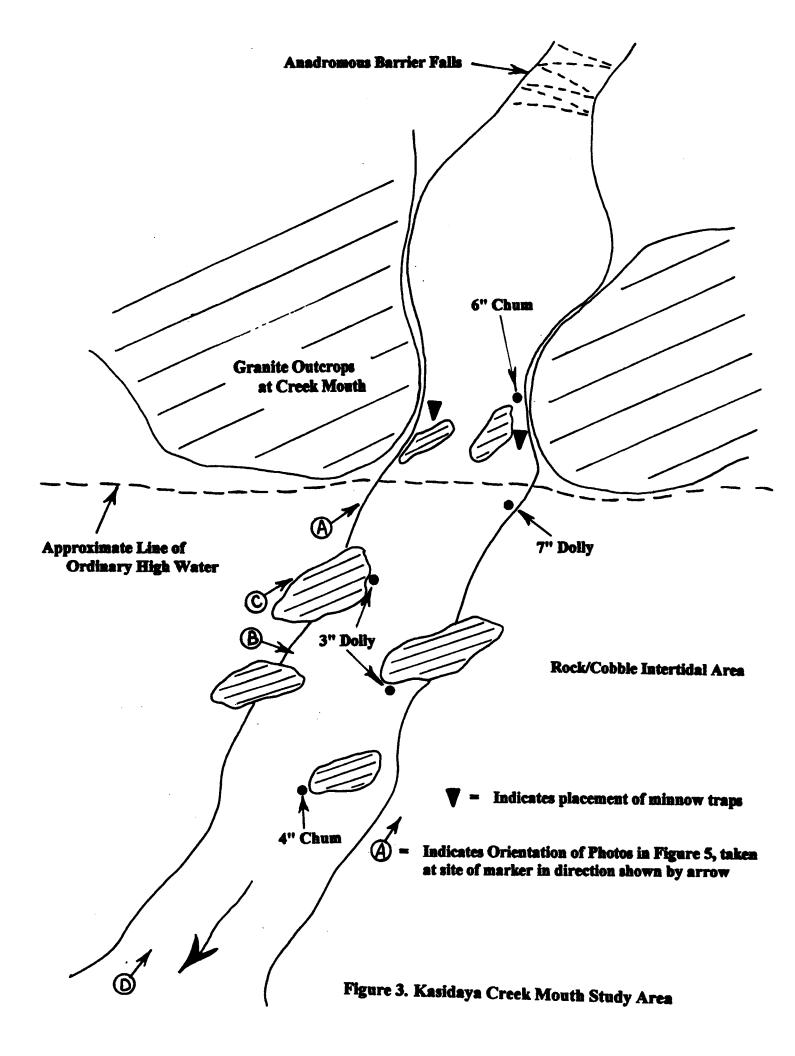


Figure 2. Diversion Site Study Area





4A



4C graphs of Diversion Site Study Area



4E



5A



5C